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ABSTRACT

Information on job openings for college graduates in Connecticut is provided. Projected openings in the state for 1985-1990 are indicated for nine major occupational categories: clerical workers, service workers, operatives, professional/technical occupations, crafts and kindred workers, sales workers, managers/officials/proprietors, laborers, and farmers and farm managers. Main complications in evaluating whether Connecticut colleges are graduating an adequate labor supply are identified. For each occupational category, information is provided on the types of training needed by workers to qualify for their current jobs. It is concluded that the supply of college-trained personnel is most critical for professional/technical occupations, especially health professionals, accountants, computer specialists, and teachers in certain fields. Connecticut's colleges are responding to these needs with new programs, but additional strategies to increase enrollment in health care fields may be needed. A high demand exists for clerical and administrative support personnel, with significant shortfalls in the number of graduates from secondary school, college, and other training programs. Joint program efforts between vocational education and two-year colleges may be valuable for preparing craft and kindred workers. (SW)

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Report

Research Report R-3-85
June 1985

Board of Governors for Higher Education
Department of Higher Education
State of Connecticut

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EMPLOYMENT NEEDS AND THE SUPPLY OF COLLEGE GRADUATES IN CONNECTICUT

According to a five-year projections developed in 1984 by the Connecticut Labor Department,[1] nearly one-half million job openings will occur in Connecticut between 1985 and 1990. Of these, 300,000 will be replacement openings resulting from worker death or retirement, and 170,000 will be additions to the labor force. By 1990, Connecticut's workforce will total almost 1.8 million persons.

Table I shows projected openings to 1990 by major occupational category. More than one-fifth of all openings will be for clerical workers, followed by service workers, then professional, technical and kindred workers. Many of the high demand occupations require relatively little training, a trend which is echoed nationally.

TABLE I

TOTAL PROJECTED JOB OPENINGS IN CONNECTICUT, 1985-1990

Occupation Grouping	Number	Percent
Clerical Workers	102,783	22.0%
Service Workers	83,274	17.8%
Professional, Technical and Kindred Occupations	82,814	17.8%
Operatives	56,193	12.0%
Managers, Officials and Proprietors	45,444	9.7%
Crafts and Kindred Workers	41,563	8.9%
Sales Workers	37,892	8.1%
Laborers, Excluding Farmers	15,253	3.3%
Farmers and Farm Managers	1,207	0.3%
TOTAL	466,423	100.0%

[1] Occupational Outlook 1984-1990. Connecticut Labor Department, July 1984.

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Connecticut colleges and universities award about 27,000 degrees annually, or 135,000 awards over five years. One-half of these awards are at the bacheior's level, over one quarter at levels beyond the bachelor's and one fifth at the associates level or below.

Several major complications arise in assessing the extent to which Connecticut colleges and universities are graduating an adequate number of persons to meet the state's needs:

- The national occupational structure used in projecting employment need is not differentiated according to level of education. Thus, occupations usually requiring only high school graduation can be grouped with those requiring post-baccalaureate study.

- Connecticut colleges and universities are not the only suppliers of trained personnel. Training programs are available at high schools, vocational-technical schools, private occupational schools, and programs administered by the Connecticut Labor Department, as well as through private businesses.

- College graduates migrate both into and out of Connecticut for jobs. Massachusetts, New York and Rhode Island are particularly likely to exchange trained personnel with Connecticut as companies recruit across state boundaries.

- College academic programs do not match occupations directly. For example, each year approximately 2,500 humanities majors and 2,300 general studies majors graduate in Connecticut. It is difficult to identify specific occupations for which these and other graduates are trained, and yet they enter the workforce as highly educated and fully contributing members. Indeed, the advantages of recruiting humanities graduates who have received a broad-based education have recently been articulated by businesses across the nation.

- Many graduates do not immediately enter the job market. As many as 25 percent of state technical college graduates continue on to four year programs, and a similar proportion of bachelor's recipients immediately enter graduate school. Counting program graduates can significantly overestimate actual supply.

- A significant minority of degree recipients already are employed in the labor market prior to graduation, sometimes in occupations related to their program of study. Again, this will result in overestimation of any measurement of occupational supply that is based on program graduates.

A recent study by the Bureau of Labor Statistics[2] (BLS) reported on a national survey which asked workers where they obtained training for their current positions. While a slightly different occupational structure was used than the one in Table 1, the results indicate a relationship between education and occupations (Table 2). Fully 70 percent of workers in professional speciality occupations indicated they needed four or more years of college to qualify for their current job, compared to 34 percent of those in executive, administrative and managerial occupations, 24 percent of those in technical positions and six percent of those in administrative support/clerical positions. Two-year college training was most often cited by those in technical occupations, with 20 percent indicating they obtained their training from this source.

While it is not possible to relate precisely the supply of graduates from Connecticut colleges and universities to the state demand for employees, some general observations can be made that may guide program planning.

CLERICAL WORKERS

The greatest statewide need is expected to be for workers in clerical occupations, with more than 100,000 job openings to 1990. Over 17,000 openings are anticipated for secretaries and up to 10,000 openings for accounting clerks/bookkeepers, two major occupations for which training is available at Connecticut colleges, as well as in other organizations. The State Department of Education projects a significant under-supply of trained personnel from vocational programs, colleges and proprietary organizations.[3]

Fourteen percent of those in this occupational grouping responding to the BLS Survey cited college as a source of training. Cooperative strategies to increase enrollment in current programs and to develop additional initiatives are needed to meet this statewide need.

SERVICE WORKERS

The second largest need in Connecticut to 1990 is expected to be for service workers, with over 80,000 openings. Janitors, porters and cleaners alone account for almost 25 percent of this demand. Only seven percent of service workers, however, cited college as a source of training, suggesting that Connnecticut colleges will have only a minor role in training personnel for this occupational category.

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[2] M. Cavey and A. Ecke How Workers Get Their Training. Occupational Outlook Quarterly. Winter, 1984.

[3] Connecticut Three-Year State Plan for the Administration of Vocational Education. Connecticut State Board of Education, February, 1985.

TABLE 2

SOURCES OF TRAINING NEEDED BY WORKERS TO QUALIFY FOR THEIR CURRENT JOBS, BY MAJOR OCCUPATIONAL GROUP

Occupational Grouping 1	Occupational Grouping 2	Sources of Training*						
		High School Voc-Ed	Post-High School Voc-Ed	2 Year College	4 Year College	Formal Company	Informal OJT	Other**
Clerical Workers	Administrative Support and Clerical	16%	5%	8%	6%	7%	31%	3%
Service Workers	Service Workers	2%	6%	4%	3%	9%	18%	3%
Professional, Technical and Kindred	Professional Specialties	2%	5%	7%	70%	9%	22%	6%
	Technical & Related	5%	11%	20%	24%	14%	32%	9%
Operatives	Machine Operators, etc.	3%	2%	2%	1%	6%	26%	4%
	Transportation, etc.	1%	1%	0%	0%	8%	26%	7%
Managers, Officials and Proprietors	Executive, Administrative and Managerial	3%	3%	5%	34%	12%	39%	7%
Crafts & Kindred	Precision Production, Craft and Repair	5%	4%	5%	2%	17%	40%	15%
Sales Workers	Sales	2%	2%	3%	8%	12%	28%	5%
Laborers	Handlers, Equipment Cleaners Helpers and Laborers	1%	0%	1%	0%	2%	13%	2%
Farmers & Farm Managers	Farming, Forestry & Fishing	2%	1%	2%	4%	1%	16%	11%

* All are non additive; many workers reported more than one source of training.
** Armed forces, correspondence courses, friends or other experience not related to work.

SOURCE: Occupational Outlook Quarterly, Winter, 1984.

PROFESSIONAL, TECHNICAL AND KINDRED OCCUPATIONS

This occupational category covers a wide variety of occupations, including engineers, scientists, technicians, medical workers, computer specialists, analysts and planners, teachers, performing artists and other professional and technical occupations. College-level education was cited as a source of training by 77 percent of those in professional specialties and by 44 percent of those in technical occupations. About 16,000 openings a year are anticipated to 1990.

Table 3 shows the occupations within the professional/technical category where demand is projected to exceed 2,000 openings over the next five years, or more than 400 per year on average, together with estimated supply as measured by degree recipients from programs related to these occupations.

TABLE 3

PROFESSIONAL, TECHNICAL AND KINDRED OCCUPATIONS
PROJECTED TO HAVE HIGH DEMAND
1985-1990

Occupation	Projected Number of Openings	Related Instructional Programs		Projected Number of Graduates 1984 x 5	Supply - Demand
		Level	CIP		
Engineers	6,879	B,M,D	14	6,925	+ 46
Engineering/Science Technicians	5,677	C,A,B	15,41	5,110	- 577
Medical Workers, Excluding Technicians	14,009	A,B,M,D,P	18	7,315	-6,694
Other Health Technicians	8,433	C,A,B,M	17	3,040	-5,393
Computer Specialists	4,962	B,M,D A	11 07.03	1,230 1,885	-1,837
Teachers (excluding college & univ.)	8,045	B	13	4,175	-3,872
Writers, Artists, Entertainers	4,047	An aggregate of a variety of professional activities.			
Other Major Occupations. Accountants	6,081	B,M	06.02	3,785	-2,296
Buyers	2,688	Supply comes from graduates in business and marketing programs.			
Lawyers & Kindred Workers	3,508	A,B,M,D,P	22	3,410	- 98

Significant discrepancies appear between the supply of and demand for trained personnel in some professional/technical occupations in Connecticut during the next five years. The greatest under-production is in the health related fields, where a 12,000 person gap exists. The need is projected to be especially high for professional nurses, where the shortfall may be as much as 4,500 persons over five years. Degrees conferred in the health fields, however, actually have declined slightly between 1982 and 1984 despite an expansion in the number of programs.

As of July 1984 there were four licensed programs in the health sciences which may add graduates when the programs become accredited. In addition, trained personnel are likely to be available from hospital-based programs, and from persons returning to the workforce. The difference between supply and demand, however, is still likely to be significant.

Other professional occupations that may face under-supply are computer specialists, teachers and accountants. A 1983 Department of Higher Education study of computer-related programs[4] identified an over-production of low-skill personnel such as data processing operators (CIP 07.03) and an under-production of highly-skilled technicians. In response, four new programs at the bachelor's level were licensed as of July, 1984 and are proceeding to accreditation. As these new programs mature, the gap between supply and demand may close.

The past decade has seen a dramatic decline in the number of baccalaureate degrees conferred in education. The unmet need for teachers will be mitigated to the extent that graduates in fields other than education and prior years' graduates also enter the teaching profession. In 1983, the State Department of Education approved about 3,600 initial teaching certificates, of which less than half went to new college graduates. It is not known how many of these newly certified individuals actually sought teaching positions, complicating assessments of potential teacher shortages, although difficulties already exist in recruiting science and mathematics instructors.

The need for additional accountants may be helped with the maturation of one new bachelor's program currently under licensure. Graduates from other business-related programs also may meet some of this demand, again reflecting the imprecise nature of occupational/program planning in higher education.

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[4]Report and Recommendations of the Special Advisory Committee on Data Processing and Computer and Information Science Programs. Department of Higher Education, Hartford, Connecticut, March 1983.

The overall supply of and demand for engineers appears quite balanced at present, although discrepancies exist in particular specialties, such as computer, mechanical and electrical engineering. The supply of engineering/science technicians also is difficult to assess accurately. As many as 25 percent of those graduating with an associates degree actually continue into a four-year degree program. In addition, graduates from technical programs are qualified to enter other occupations. The under-supply of trained personnel in the engineering/science technician category may exceed considerably the deficit observed in Table 3 (-577). On the other hand, if graduates of life and physical science programs are included (CIP 26, 40), there is more than sufficient supply for the occupational category as a whole.

In summary, major areas of unmet need for professional and technical workers appear to be:

- Health care professionals, especially nurses
- Teachers, especially in mathematics and science
- Computer specialists
- Accountants

Connecticut's colleges and universities are responding to these needs with new programs, but additional strategies in the area of health care may be needed.

MANAGERS, OFFICIALS AND PROPRIETORS

This occupational category includes workers who direct, control or provide technical support for business and government. Thirty seven percent of workers in this category cited college as a source of training. About 9,000 openings annually are expected to 1990.

Bachelors' and masters' graduates from programs in business, the social sciences, and public affairs (06, 45, 44) are likely to constitute a major component of the supply of trained personnel available for these positions. There are over 7,000 graduates a year in these program areas, over 4,700 in business and management alone. In addition, many openings are likely to be filled through promotion and employee relocation rather than job entry, and fully 39 percent of workers in this occupational category cited informal on-the-job training as a source of training. An adequate supply of trained personnel appears to exist to meet demand in this general occupational category.

CRAFTS AND KINDRED WORKERS

This occupational category includes skilled crafts workers. Of the over 8,000 annual openings, many will be in the higher-skill occupations, such as machinists, repairers and electronics workers. While training for many crafts positions historically has been available through vocational education programs and apprenticeships, new technologies are requiring greater sophistication in some occupations. Programs responsive to this new "low technology" orientation have yet to be developed and may appropriately be a shared responsibility of vocational education and the state's two year colleges.

SALES WORKERS

Almost 38,000 positions are projected to become available in Connecticut in the sales worker category to 1990. Almost half (18,000) are expected to be for sales clerks, and over 10,000 for sales representatives. Other occupations included in this category are insurance agents, real estate agents and stock and bond sales agents, where combined demand does not exceed 3,000 over the period. It appears that in those occupations for which college-level training is offered, the supply of graduates is likely to meet anticipated demand.

OTHER OCCUPATIONAL CATEGORIES

Most occupations in the remaining categories of operative, laborers and farmers do not require college-level training.

SUMMARY

The supply of college-trained personnel is most critical for professional and technical occupations, where the need for more health professionals, computer specialists, accountants and teachers in certain fields is particularly striking. Connecticut's colleges and universities are responding to these needs with new programs, but additional strategies to increase enrollment in the area of health care may be needed.

A high demand exists for clerical and administrative support personnel, with significant shortfalls in the number of graduates from colleges, high schools, vocational-technical schools and other training programs. Efforts to increase enrollment in these programs are suggested.

While training for craft and kindred workers historically has been available through the vocational-technical schools, the increasingly technological nature of some of these occupations may justify the development of joint program initiatives between vocational education and the state's two-year colleges.

Whether identified need is best met through the addition of new programs or strategies to bolster enrollment in existing programs will depend on current student interest. For example, if more students apply for programs in high-need areas than can be accommodated, program expansion may be appropriate. On the other hand, unmet need may result from lack of interest in specific occupations because of low salary levels, lack of opportunities for advancement or perceived low occupational prestige. Some of the occupations with unmet need identified above are traditionally female occupations that have become less attractive as opportunities for women have expanded. Strategies to bolster enrollment in such programs as secretarial, health care and teaching will need to be accompanied by structural changes in these occupations in order to attract more workers of both sexes to these fields.